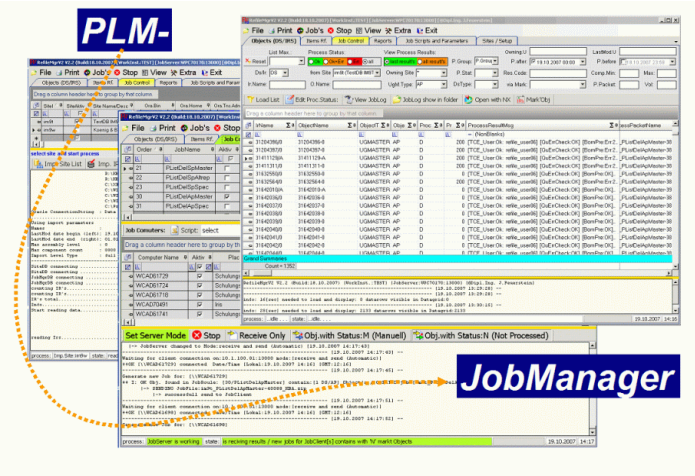


PLMJobManager
Compare NX Data via CheckBox

Presentation created by Josef Feuerstein 09.10.2010

Inhaltsverzeichnis

Introduction – initial situation

CheckBox is a solution to extract geometrical data, non geometrical data and drawings from NX-Parts for comparison, to detect differences between these parts.

Ever NX Version change raises the following questions:

- Does **“my data”** change because of the conversion to the new NX version?
- Can **“my data”** still be opened, update, edit and saved?
- Is **“my data”** in the new version in the same way manageable as in the current productive version?

This questions can only be answered when the **“own data”** is verified through appropriate methods!

A manual verification is very comprehensive and requires a **huge amount of time**. In addition, the tests are only successful if such manual checks are performed systematically. The **immense time** required for manual testing in practice leads to the fact that this part of the conversion is usually treated only superficially.

To answer these questions the software **CheckBox** was developed in cooperation with the companies **BSH, KBA, MTU, Renk, ASML** and **S-PLM**

Introduction – initial situation

The goal:

Developing of a tool that answers the following question:

Are the data in the new version the same as in the old version?

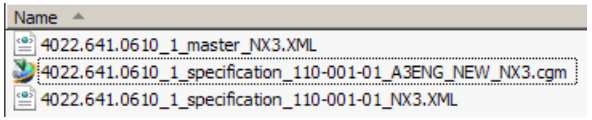
The following slides show you the concept on how to check the data in a save way with the help of the CheckBox and the PLMJobManager.

Introduction CheckBox Process Overview

How is CheckBox working?

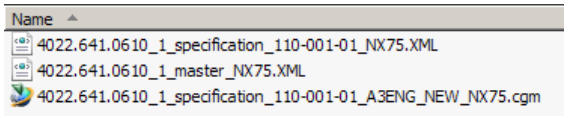
Step 1: Extraktion NX3 Data

Result: extracted NX3 Data



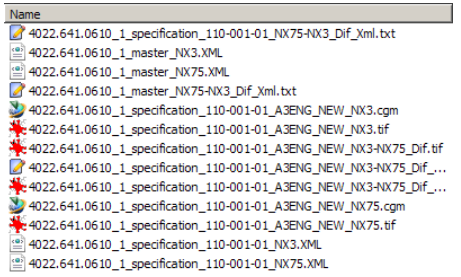
Step 2: Extraction NX7.5 Data

Result: extracted NX7.5 Data



Step 3: Generate Analyze Data

Result: NX3-7.5 Analyze Data

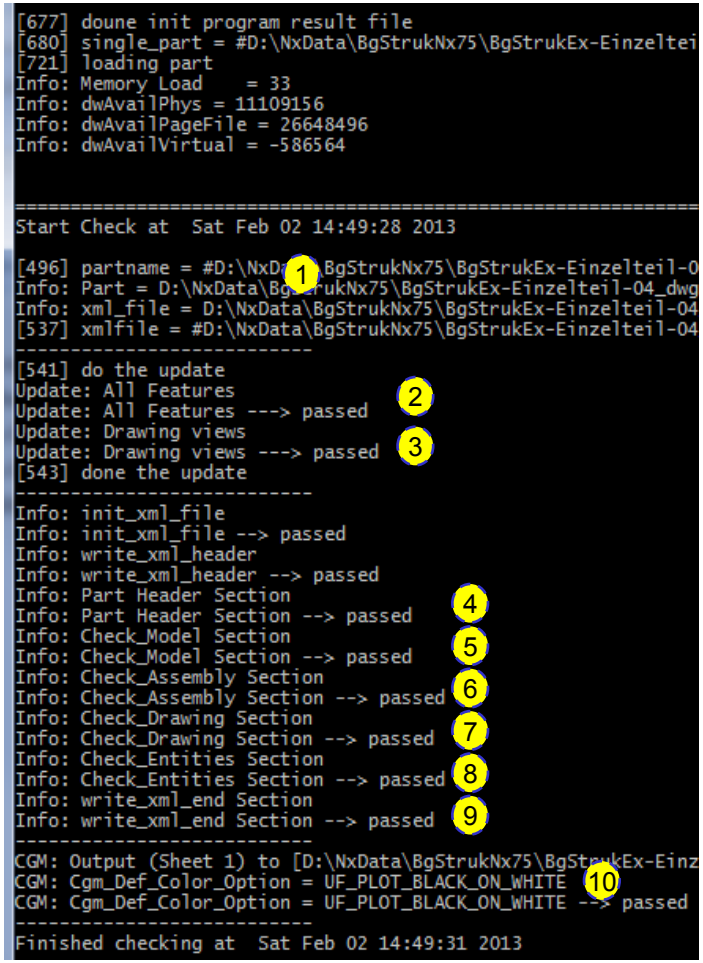


Introduction CheckBox Data Extraktion

After extracting CheckBox Data the CB.Log files is analysed an the results are listed as partial Results. The following list shows how we do classify the CheckBox extraction Results.

- PL = Part load (1)
- UF = Update all Feature (2)
- UD = Update Drawing (3)
- PH = Part Header (4)
- MD = Model Data (5)
- AS = Assembly Data (6)
- DR = Drawing Data (8)
- EN = Entity (9)
- CBXml = CB.Data File (xml) (10)
- CGM = Drawing .cgm Files

The results of extracting data is imported into the JobServer Database.



Introduction CheckBox Compare Data

Compare → having Diff's?

YES

Create extended Data:
- DifReport.txt
- Dif.tif
- Merge.tif
- MergeCgm.prt

Result is an Error:
In this case it is required to Check what is the reason for this differences

NO

Result Is OK

Introduction CheckBox Details off Extracted XML Data

Job Data:

- ProgramData
  - ProgramName: NxCheckBox
  - ProgramRelease: V1.1.1.18
  - BuildDate: (May 20 2010)
  - CustomLicense: unknown
- RunData
  - StartLoadPartDateTime: 2010-05-26 17:58.00
  - EndLoadPartDateTime: 2010-05-26 17:58.01
  - StartLoadPartMemoryAllocation: 1753136
  - EndLoadPartMemoryAllocation: 1751792
  - Action
  - DetailOption: 26
  - StartUpdateDateTime: 2010-05-26 17:58.01
  - UpdateAllFeaturesReturnValue: -1
  - StructureSyncReturnValue: -1
  - UpdateAllViewsReturnValue: -1
  - EndUpdateDateTime: 2010-05-26 17:58.01
  - StartDateTime: 2010-05-26 17:58.01
- NxData
  - NXRelease: NX V5.0
  - NXVersion: 105.0
  - AssemblyLoadOptions
    - load_options: 1 [UF_ASSEM_load_from_search_dirs]
    - parts_list: 0
    - update: 1 [UF_ASSEM_update_report]

ModelData:

- ModelData
  - Refsets
    - Refset
      - Name: Entire Part
      - Volume: 1342.584642
      - VolumeBodies_n: 2
      - Feature3D_n: 0
      - CentreOfGravity
        - X: 10.078155
        - Y: 7.560351
        - Z: 1.238954
      - MomentOfInertia
        - X: 815346.315993
        - Y: 1455367.113393
        - Z: 2220782.513485
    - Refset
  - ModelDataBase
    - Features
      - TotalFeatures_n: 0
      - AliveFeatures_n: 0
      - SuppressedFeatures_n: 0
      - CondemnedFeatures_n: 0
      - DeletedFeatures_n: 0
      - TemporaryFeatures_n: 0
    - Bodies

Component:

- Components
  - Component
  - Component
    - File: %UGMGR=V3.2 PH=QnBdUZwmVe1p
    - Handle: RM%UL=V1.0 PH=wTDdUZwmVe
    - SuppressState: 0
    - SuppressByExpression
    - ReferenceComponent
    - RefsetCurr: EINFACH
    - InstanceName: BGSTRUKEX-KBG-01_01
    - ComponentLevel: 2
    - Callout: 10
    - MemberCount: 59
    - ComponentArrangement
      - UsedArrangement: Arrangement 1
    - Mating
    - Matrix
      - X1: 1.000000
      - Y1: 0.000000
      - Z1: 0.000000
      - X2: 0.000000
      - Y2: 1.000000
      - Z2: 0.000000
      - X3: 0.000000
      - Y3: 0.000000
      - Z3: 1.000000
      - originX: 360.000000
      - originY: -420.000000
      - originZ: 0.000000

Introduction CheckBox Details of Difference Report

DifReport.txt

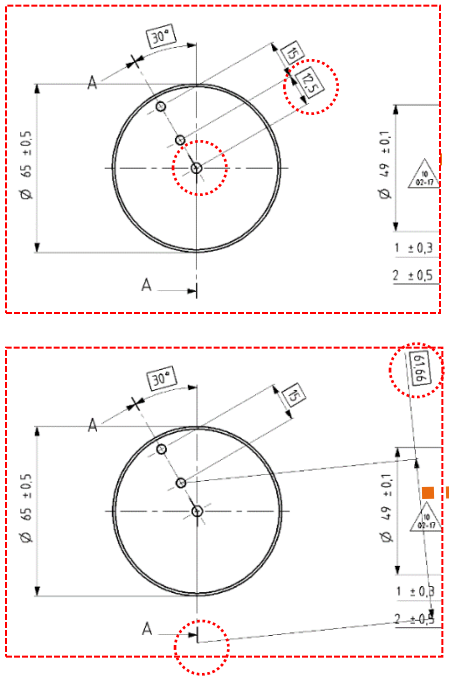
```
CheckBox Report:
JM CheckBoxVer...:V2.696 (Build:26.10.2010)
Date.............:26.10.10 22:37:10

CheckBox.Data 1:[NX V3.0[103.0]]                                  |CheckBox.Data 2[NX V7.5[107.0]]
------------------------------------------------------------------|------------------------------------------------------------------------
CliName.:[@DB/4022.625.4014/2/specification/110-001-01]           |CliName.:[@DB/4022.625.4014/2/specification/110-001-01]
PartDesc:                                                         |PartDesc:
PartHis.:~                                                        |PartHis.:25 19 Oct 10 00:55 NT Intel jfeuerst NX 7.5.1.5 - External U~
PartHis.:24 18 Oct 10 22:29 NT Intel jfeuerst NX 3.0.3.2 - External ~|PartHis.:24 29 Jul 10 11:47 NT Intel JFeuerst NX 7.5.0.32 (NX Manager~
PartHis.:23 10 May 10 17:00 NT Intel gmiddel NX 3.0.3.2<!<OT_PUB>!>  |PartHis.:23 10 May 10 17:00 NT Intel gmiddel NX 3.0.3.2<!<OT_PUB>!>
PartHis.:22 10 May 10 16:41 NT Intel gmiddel NX 3.0.3.2<!<OT_PUB>!>  |PartHis.:22 10 May 10 16:41 NT Intel gmiddel NX 3.0.3.2<!<OT_PUB>!>
PartHis.:21 10 May 10 16:32 NT Intel gmiddel NX 3.0.3.2<!<OT_PUB>!>  |PartHis.:21 10 May 10 16:32 NT Intel gmiddel NX 3.0.3.2<!<OT_PUB>!>
------------------------------------------------------------------|------------------------------------------------------------------------
Data extraction info:                                             |Data extraction info:
NxVer...:NX V3.0[103.0]                                           |NxVer...:NX V7.5[107.0]
NxCB.Rel:V1.1.1.18 Build:(Aug 27 2010)                            |NxCB.Rel:V1.1.1.18 Build:(May 20 2010)
Date....:18.10.10 22:29:51                                        |Date....:19.10.10 00:55:03
=================================================================================================================================================
CheckBox Compair Result:
ResultIsErr......:True
ResultHasWaring..:True
ResultCode.......:64
ResultCodeBinary.:64
ResultMsgShort...:[PH:OK][MD:OK][AS:OK][DR:OK][EN:64 Msg:Err:Origin][Pef:OK]
=================================================================================================================================================
CheckBox compair report:
PartHistoCheck: OK
Warning:DR(32):[ViewDependentObjects_n].[A3ENG_NEW]:[Value Differ(<>)!!]
 |->NX V3.0[103.0]: 74
 |->NX V7.5[107.0]: 73
++Error:EN(64):[Origin]:[X:[240.553540] Y:[291.117523] Z:[0.000000]]
 |->NX V3.0[103.0]: [Type:[26] Subtype:[3] Desc:[UF_dim_parallel] Name:[] Handle:[RM%UL=V1.0 PH=gBmdYwshQS4FxA AUID=Rgod6KgTQS4FxA R0000820300000018]
 |              Origin:[X:[153.753462] Y:[241.003475] Z:[0.000000]] Texts:[12,5]]
 |->NX V7.5[107.0]: [X:[153.753462] Y:[241.003475] Z:[0.000000]]
Warning:EN(64):[Texts.Text]:[61,66]
 |->NX V3.0[103.0]: [Type:[26] Subtype:[3] Desc:[UF_dim_parallel] Name:[] Handle:[RM%UL=V1.0 PH=gBmdYwshQS4FxA AUID=Rgod6KgTQS4FxA R0000820300000018]
 |              Origin:[X:[153.753462] Y:[241.003475] Z:[0.000000]] Texts:[12,5]]
 |->NX V7.5[107.0]: [12,5]
PerfDif.LoadPart.Factor>1.2 Warning:4.00sec(Nx7.5)/1000msec(Nx3)=4.0[PerfDifFactor]
```

Introduction CheckBox Analyze Data Compare Drawings

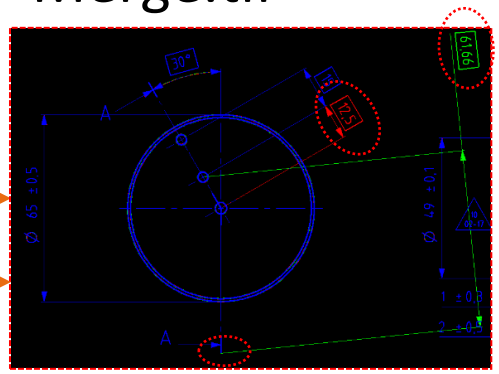
CheckBox extracts CGM files from specifications. These CGM files are used to create output data.

NX3.cgm

NX7.5.cgm



Merge.tif



From this file we extract the PPM (Parts per Million) value which shows if drawings have differences.
The Merge.tif image file is also be used to see quick differences between drawings.

This method was developed by Thomas Körner from B/S/H.

Introduction CheckBox Analyze Data Compare CB.xml files

All analyzed Data from XML and from Drawing compare will be combined to one Result:

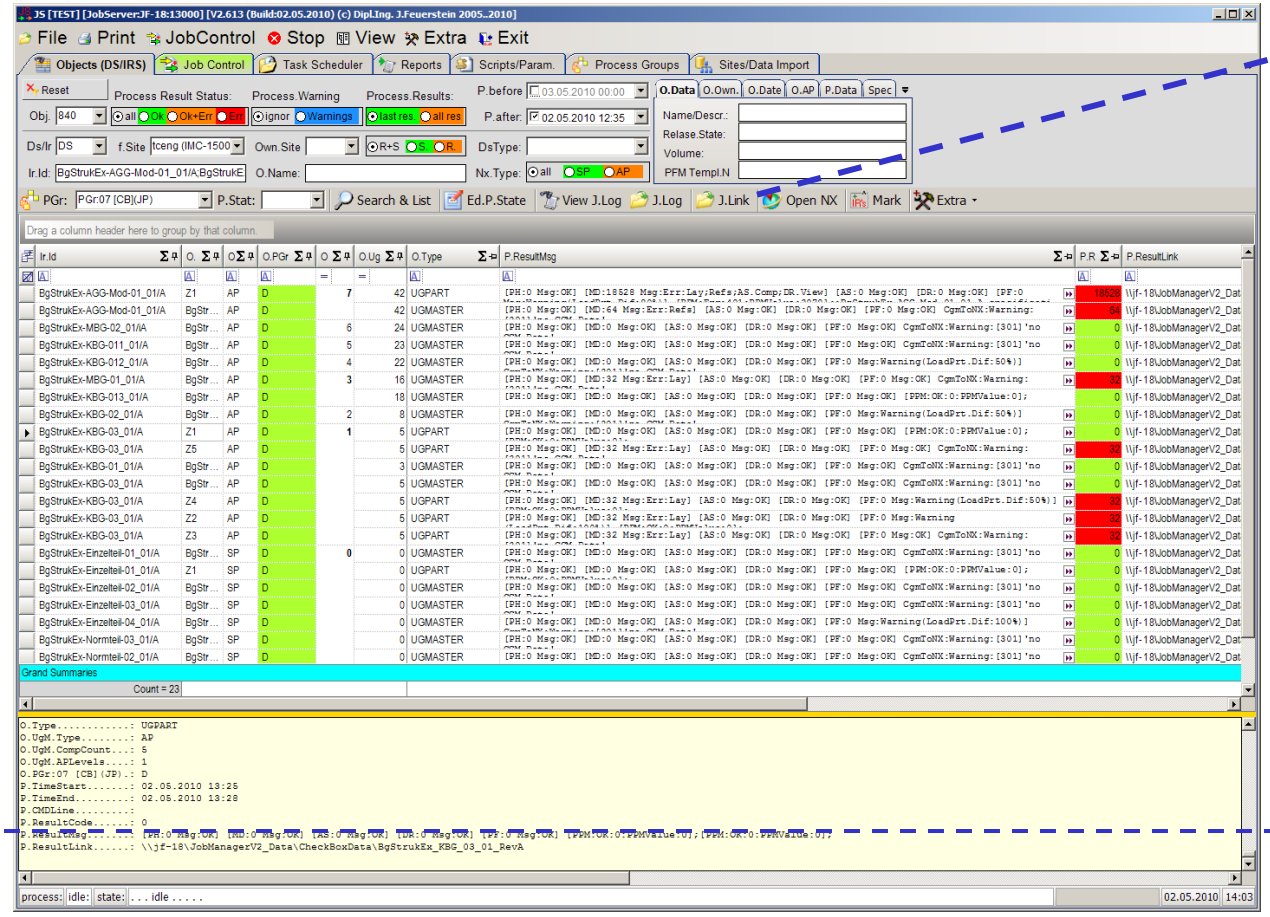
- PH = Part Header (from XML) 1
- MD = Model Data (from XML) 2
- AS = Assembly Data (from XML) 3
- DR = Drawing Data (from XML) 4
- EN = Entity Data Dim/Text (from XML) 5
- PPM= Dif.tif (from Drawing compare) 6

– If the Result Value is = 0 no differences between the part's are found.
Example:
[PH:OK] [MD:OK] [AS:OK] [DR:OK] [EN:OK] [PPM:OK]
1 2 3 4 5 6

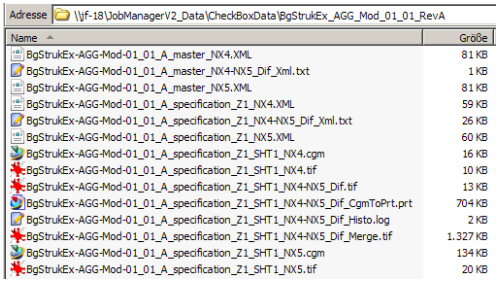
– If the Result Value is > 0 there are differences between the Parts → the Parts must be checked !
Example:
[PH:OK] [MD:ERR:Lay;Refs;AS.Comp;DR.View] [AS:OK] [DR:OK] [EN:OK] [PPM:3078]
1 2 3 4 5 6

Introduction CheckBox Analyze Data Get Entire Results

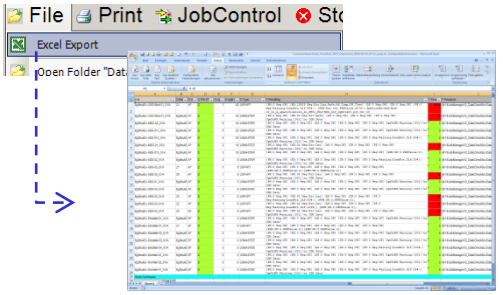
All Result's are view via PLMJobManager



Via J.Link you have a Quick access to all Data



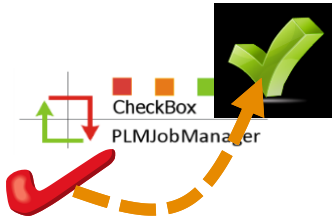
You export the Data to Excel analyze the Result for own Report's



Benefits

Benefits for using NX CheckBox

- ✓ Getting overview about NX – TC Software Quality
- ✓ Getting overview about your NX - TC Data Quality
- ✓ Helps to setup NX - TC customer settings
- ✓ Helps to find issues before designers working with the new NX – TC Version
- ✓ Helps to keep the value of PLM Data
- ✓ Reduces cost's "after upgrade" because
  Data and software issues can be better identified and solved before upgrade.
- ✓ Reduces Upgrade risks



Introduction CheckBox Involved Company's

The CheckBox Software is developed by Mr, Bernd Schieber (SISW Stuttgart).
Software specification, project coordination and PLMJobManager integration was done by Mr. Josef Feuerstein (addPLM)

All Company's did spend 3 Day's of Services to SISW.

At the Meeting (on 28.04.2010) the participants' agreed that it is possible for another company to join this Project. To take part in this Project the new company has also to spend 3 Day's of Services on this project.
Info: The PLMJobManager Software is a separated Software and is not Part of the CheckBox Tool.

KION GROUP – New 06.2011
Mr. Michael Scheltens
Mr. Peter Angenendt

B/S/H/
Mr. Thomas Körner
Mr. Krzysztof Duszkiewicz
Mr. Karl Bertram

Siemens PLM Software
Mr. Bernd Schieber

CheckBox PLMJobManager
Mr. Josef Feuerstein
Mr. Sascha Güth

ASML
Mr, Maarten Romers

MTU Aero Engine
Mr. Norbert Zimmert
Mr. Michael Conrad

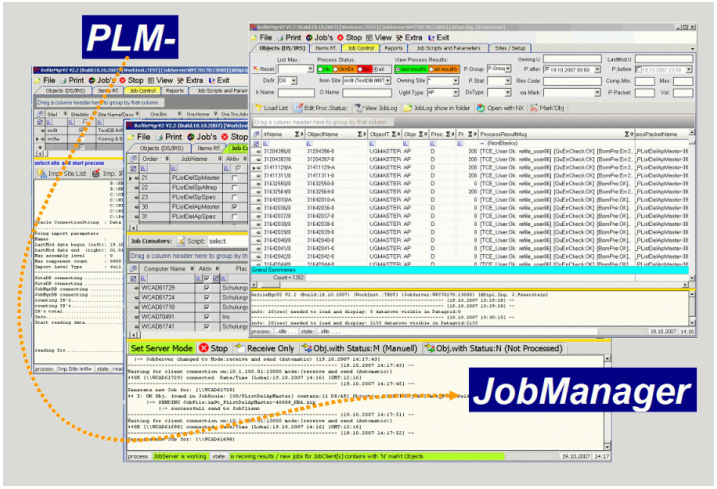
RENK
Mr. Ulrich Lange
Mr. Helmut Wirth

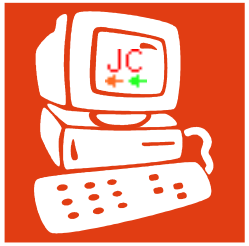
KBA
Mr. Dr. Christian Fedrowitz
Mr. Martino Rigotti

zimmer – Personal Fit. Renewed Life.
Mr. Stefan Auer

HDW
Mr. Reinhard Lange
Mr. Rolf Wendschlag

System requirements





JobServer:

- WinXP or Win7 Workstation
- W2003 or W2008 Server

JobClient:

- WinXP or Win7 Workstation
- W2003 or W2008 Server
- with Full Nx- und TC- installation